REMARKS/ARGUMENTS

The Examiner is thanked for the thorough examination and search of the subject.

Claims 163-208 are pending; Claims 163-165, 168, 171-181, 184, 187-189, 194-201 and 205-208 have been currently amended; Claims 1-162 have been canceled. No new matter is believed to have been added.

Response to Claim Rejections under 35 U.S.C. 112

Reconsiderations of Claims 163-178 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement are requested based on the following remarks.

The Examiner considers that "There is no original basis for claiming first, second and third polymers. Polymer is only mentioned for first and second filling layers and the second filling layer is not the equivalent of the second and third polymer layers of claim 163 or the second polymer layer of claims 179 and 197. "Polymer" is generic and there is no original basis for either equating the filling layers to the interlevel dielectric layers comprising "second" and "third" dielectric layers comprising "PI, BCB, porous dielectric material, stress buffer material, or the like", or expanding the disclosed interlevel dielectric layers to "polymer". "Polymer" is generic and broader and has no original basis here. All claims are dependent on new matter and are rejected." ~ *See lines 5-13 in the last paragraph, in the last Office Action mailed Jun. 17, 2008* ~

Applicants respectfully traverse the Examiner's opinion because PI and BCB are a kind of polymer material and therefore, the interlevel dielectric layers, such as PI or BCB, can be deemed as a polymer layer. The subject matter that "the interlevel dielectric

layers are polymer layers" is believed to have an original basis.

Response to Claim Rejections under 35 U.S.C. 103

Applicants respectfully traverse the rejections for at least the reasons set forth below.

Response to Claims 163-178

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As currently amended, independent claim 163 is recited below:

163. A chip package comprising:

a first polymer layer;

a die between a first portion of said first polymer layer and a second portion of said first polymer layer, wherein said die has a top surface substantially coplanar with a top surface of said first portion and with a top surface of said second portion;

a second polymer layer on said top surface of said die and on said top surfaces of said first and second portions;

a first patterned metal layer over said second polymer layer, over said top surface of said die and over said top surfaces of said first and second portions, wherein said first patterned metal layer is connected to said die through an opening in said second polymer layer, wherein said first patterned metal layer comprises electroplated copper, and wherein said first patterned metal layer comprises at least a part of a passive device comprising a portion directly over said top surface of said first portion;

a third polymer layer on said first patterned metal layer, over said second polymer layer, over said top surface of said die and over said top surfaces of said first and second portions; and

a metal bump directly over said top surface of said first portion, wherein said metal bump is connected to said die through said first patterned metal layer.

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Reconsiderations of Claims 163-178 rejected under 35 U.S.C. 103(a) as being unpatentable over Eichelberger et al. (U.S. Pat. No. 6,396,148) in view of Wagner et al. (U.S. Pat. No. 5,196,377) and Wachtler et al. (U.S. Pat. No. 6,707,124) are requested based on the following remarks.

Applicants respectfully assert that the chip package currently claimed in Claim 163 patentably distinguishes over the citations by Eichelberger et al. (U.S. Pat. No. 6,396,148) in view of Wagner et al. (U.S. Pat. No. 5,196,377) and Wachtler et al. (U.S. Pat. No. 6,707,124).

The Examiner considers that "applicant's argument regarding "electroplated copper" is unconvincing of patentability. Again it is emphasized there are no specific copper structural differences claimed to distinguish the claimed copper over the copper of the applied art." *~ See lines 16-19, on page 3, in the last Office Action mailed Jun. 17, 2008 ~*

Applicants respectfully traverse the Examiner's opinion because "electroplated copper" can be expected to impart distinctive structural characteristics to the final product in the grain size using a TEM cross-section or in the crystal orientation using a TEM cross-section or an X-ray diffraction analysis. Furthermore, another structural feature that an electroplated copper layer is on or over an electroplating seed layer can be checked.

The Examiner considers that "There is no need to insert any features from one

reference into another to show obviousness." ~ *See lines 4 and 5 on page 4, in the last Office Action mailed Jun. 17, 2008* ~

Applicants respectfully traverse the Examiner's opinion because there is believed to be a need of a test trying whether a feature from one reference is analogously inserted or incorporated into another feature from another reference based on the knowledge of one skilled in the art. Typically, analogous prima-facie cases are needed to support obvious rejection, with the explanation why the combination of these prima-facie cases is obvious by one skilled in the art.

The Examiner considers that "Regarding polymer interlevel dielectric layers, the prior art discloses polymer interlevel dielectrics, and again, insertion of one reference onto another is not required to show obviousness. For low capacitance and absent unexpected results, it would have been obvious to substitute one interlevel dielectric material (polymer) for another known equivalent (oxide) as suggested by the applied art." ~ *See lines 6-10 on page 4, in the last Office Action mailed Jun. 17, 2008* ~

Applicants respectfully traverse the Examiner's opinion because there is believed to be a need of a test trying whether a feature from one reference is analogously inserted or incorporated into another feature from another reference based on the knowledge of one skilled in the art. Furthermore, the Examiner fails to show the exact description that one interlevel dielectric material (polymer) can be substituted for another known equivalent (oxide), in the applied art referred to by the Examiner.

Furthermore, all of Eichelberger et al., Wagner et al. and Wachtler et al. fail to teach, hint or suggest that a patterned metal layer over two portions of a polymer layer and over a die between the two portions may comprise at least a part of a passive device comprising a portion directly over one of the two portions, as currently claimed in Claim

163.

For at least the foregoing reasons, withdrawal of rejection under 35 U.S.C. 103(a) to Claim 163 is respectfully requested.

Applicants respectfully submit independent Claim 163 patently distinguishes over the prior art references, and should be allowed. For at least the same reasons, dependent Claims 164-178 patently define over the prior art as well.

Response to Claims 179-196

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As currently amended, independent Claim 179 is recited below:

179. A chip package comprising:

a first polymer layer;

a die between a first portion of said first polymer layer and a second portion of said first polymer layer, wherein said die has a top surface substantially coplanar with a top surface of said first portion and with a top surface of said second portion;

a second polymer layer on said top surface of said die and on said top surfaces of said first and second portions;

a patterned metal layer over said second polymer layer, over said top surface of said die and over said top surfaces of said first and second portions, wherein said patterned metal layer is connected to a first metal pad of said die through a first opening in said second polymer layer, and to a second metal pad of said die through a second opening in said second polymer layer, wherein said first metal pad is connected to said second metal pad through said patterned metal layer; and

a metal bump directly over said top surface of said first portion, wherein

said metal bump is connected to said die through said patterned metal layer.

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Reconsiderations of Claims 179-196 rejected under 35 U.S.C. 103(a) as being unpatentable over Eichelberger et al. (U.S. Pat. No. 6,396,148) in view of Wagner et al. (U.S. Pat. No. 5,196,377) and Wachtler et al. (U.S. Pat. No. 6,707,124) are requested based on the following remarks.

Applicants respectfully assert that the chip package currently claimed in Claim 179 patentably distinguishes over the citations by Eichelberger et al. (U.S. Pat. No. 6,396,148) in view of Wagner et al. (U.S. Pat. No. 5,196,377) and Wachtler et al. (U.S. Pat. No. 6,707,124).

The Examiner considers that "There is no need to insert any features from one reference into another to show obviousness." *~ See lines 4 and 5 on page 4, in the last Office Action mailed Jun. 17, 2008 ~*

Applicants respectfully traverse the Examiner's opinion because there is believed to be a need of a test trying whether a feature from one reference is analogously inserted or incorporated into another feature from another reference based on the knowledge of one skilled in the art. Typically, analogous prima-facie cases are needed to support obvious rejection, with the explanation why the combination of these prima-facie cases is obvious by one skilled in the art.

The Examiner considers that "Regarding polymer interlevel dielectric layers, the prior art discloses polymer interlevel dielectrics, and again, insertion of one reference onto another is not required to show obviousness. For low capacitance and absent unexpected results, it would have been obvious to substitute one interlevel dielectric

material (polymer) for another known equivalent (oxide) as suggested by the applied art."
~ See lines 6-10 on page 4, in the last Office Action mailed Jun. 17, 2008 ~

Applicants respectfully traverse the Examiner's opinion because there is believed to be a need of a test trying whether a feature from one reference is analogously inserted or incorporated into another feature from another reference based on the knowledge of one skilled in the art. Furthermore, the Examiner fails to show the exact description that one interlevel dielectric material (polymer) can be substituted for another known equivalent (oxide), in the applied art referred to by the Examiner.

Furthermore, all of Eichelberger et al., Wagner et al. and Wachtler et al. fail to teach, hint or suggest that a patterned metal layer over a second polymer layer on two portions of a first polymer layer and on a die between the two portions may connect two metal pads of the die, as currently claimed in Claim 179.

For at least the foregoing reasons, withdrawal of rejection under 35 U.S.C. 103(a) to Claim 179 is respectfully requested.

Applicants respectfully submit independent Claim 179 patently distinguishes over the prior art references, and should be allowed. For at least the same reasons, dependent Claims 180-196 patently define over the prior art as well.

Response to Claims 197-208

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As currently amended, independent Claim 197 is recited below:

197. A chip package comprising:

a first polymer layer;

a die between a first portion of said first polymer layer and a second portion of said first polymer layer, wherein said die has a top surface substantially coplanar with a top surface of said first portion and with a top surface of said second portion;

a second polymer layer on said top surface of said die and on said top surfaces of said first and second portions;

a patterned metal layer over said second polymer layer, over said top surface of said die and over said top surfaces of said first and second portions, wherein said patterned metal layer comprises electroplated copper, and wherein said patterned metal layer comprises a ground bus connected to a first metal pad of said die through a first opening in said second polymer layer, and to a second metal pad of said die through a second opening in said second polymer layer, wherein said first metal pad is connected to said second metal pad through said ground bus; and

a metal bump directly over said top surface of said first portion, wherein said metal bump is connected to said die through said patterned metal layer.

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Reconsiderations of Claims 197-208 rejected under 35 U.S.C. 103(a) as being unpatentable over Eichelberger et al. (U.S. Pat. No. 6,396,148) in view of Wagner et al. (U.S. Pat. No. 5,196,377) and Wachtler et al. (U.S. Pat. No. 6,707,124) are requested based on the following remarks.

Applicants respectfully assert that the chip package currently claimed in Claim 197 patentably distinguishes over the citations by Eichelberger et al. (U.S. Pat. No. 6,396,148) in view of Wagner et al. (U.S. Pat. No. 5,196,377) and Wachtler et al. (U.S. Pat. No. 6,707,124).

The Examiner considers that "applicant's argument regarding "electroplated copper" is unconvincing of patentability. Again it is emphasized there are no specific

copper structural differences claimed to distinguish the claimed copper over the copper of the applied art." *~ See lines 16-19, on page 3, in the last Office Action mailed Jun. 17, 2008 ~*

Applicants respectfully traverse the Examiner's opinion because "electroplated copper" can be expected to impart distinctive structural characteristics to the final product in the grain size using a TEM cross-section or in the crystal orientation using a TEM cross-section or an X-ray diffraction analysis. Furthermore, another structural feature that an electroplated copper layer is on or over an electroplating seed layer can be checked.

The Examiner considers that "There is no need to insert any features from one reference into another to show obviousness." *~ See lines 4 and 5 on page 4, in the last Office Action mailed Jun. 17, 2008 ~*

Applicants respectfully traverse the Examiner's opinion because there is believed to be a need of a test trying whether a feature from one reference is analogously inserted or incorporated into another feature from another reference based on the knowledge of one skilled in the art. Typically, analogous prima-facie cases are needed to support obvious rejection, with the explanation why the combination of these prima-facie cases is obvious by one skilled in the art.

The Examiner considers that "Regarding polymer interlevel dielectric layers, the prior art discloses polymer interlevel dielectrics, and again, insertion of one reference onto another is not required to show obviousness. For low capacitance and absent unexpected results, it would have been obvious to substitute one interlevel dielectric material (polymer) for another known equivalent (oxide) as suggested by the applied art." *~ See lines 6-10 on page 4, in the last Office Action mailed Jun. 17, 2008 ~*

Applicants respectfully traverse the Examiner's opinion because there is believed to be a need of a test trying whether a feature from one reference is analogously inserted or incorporated into another feature from another reference based on the knowledge of one skilled in the art. Furthermore, the Examiner fails to show the exact description that one interlevel dielectric material (polymer) can be substituted for another known equivalent (oxide), in the applied art referred to by the Examiner.

Furthermore, all of Eichelberger et al., Wagner et al. and Wachtler et al. fail to teach, hint or suggest that a patterned metal layer over a second polymer layer on two portions of a first polymer layer and on a die between the two portions may comprises a ground interconnect connecting two metal pads of the die, as currently claimed in Claim 197.

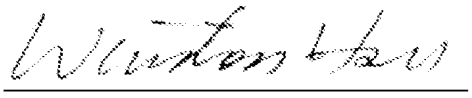
For at least the foregoing reasons, withdrawal of rejection under 35 U.S.C. 103(a) to Claim 197 is respectfully requested.

Applicants respectfully submit independent Claim 197 patently distinguishes over the prior art references, and should be allowed. For at least the same reasons, dependent Claims 198-208 patently define over the prior art as well.

CONCLUSION

Some or all of the pending claims are believed to be in condition for allowance. Accordingly, allowance of the claims and the application as a whole are respectfully requested.

Sincerely yours,



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